Pre/Post Assessment for *Nature Unbound*

1. Which definition *best* describes ecology?
   a. Study of biology including cellular processes
   b. Study of ecologists including the work that they do
   c. Study of how nature works including both abiotic and biotic factors
   d. Study of populations including disease within populations

2. Which statement *best* describes conservation's role in society?
   a. Conservation practices manage resources for the next generations to have and also use
   b. Conservation educates the public about ways that they can help Missouri animals
   c. Conservation educates landowners about the best way to manage ponds
   d. Conservation practices allow for ecologists to study nature

3. Ecologists work by:
   a. First developing a question and then setting up an experiment
   b. First developing a question and then looking up the answers in credible sources
   c. First developing a question and then creating a model
   d. Both a and b
   e. Both a and c

Use the following scenario to answer question 4, 5 and 6.

Mead's milkweed is an endangered species in Missouri. It is self-incompatible which means it produces seeds only when pollen from one plant reaches the flower of a different plant. Mead's milkweed can also spread by sprouting stems from a long underground rhizome.

4. Which reproduction strategy does Mead's milkweed utilize?
   a. Asexual reproduction
   b. Sexual reproduction
   c. Both a and b
   d. Unilateral reproduction

5. The greatest genetic diversity can be found in which colony of Mead's milkweed?
   a. A colony that is treated with pesticides
   b. A colony that reproduces by seed and vegetative reproduction
   c. A colony that is located in Missouri
   d. A colony that reproduces only by vegetative reproduction

6. Which species would have the best chance of survival?
   a. A species that has a population of genetically similar individuals
   b. A species that has a very small population
   c. A species that has a population of genetically different individuals
   d. A species that has a very large population

7. What keeps species' populations from exploding? Choose the best answer.
    a. Abiotic factors
    b. Biotic factors
    c. Limiting factors
    d. Reproductive factors

8. Key measurements of a population that ecologists make are:
    a. Size, number of predators and carrying capacity
    b. Size, density and carrying capacity
    c. Size, density and dispersion
    d. Size, carrying capacity and dispersion

9. What would happen, over time, if two species occupied the exact same niche?
    a. One would outcompete the other
    b. One would kill the other
    c. One would become dependent on the other
    d. One would mate with the other

10. Imagine that the large mammalian predators have been eliminated in an area. What would be the impact to the ecosystem over time? Choose the best answer.
    a. Prey species would increase exponentially
    b. The balance of the ecosystem would be restored
    c. The balance of the ecosystem would be upset
    d. Other species would not be impacted

11. Which combination of characteristics bests describes a species most likely to go extinct?
    a. Small population with a small home range
    b. Large population with a large home range
    c. Small population with a large home range
    d. Large population with a small home range

12. Which of the following is the major factor causing extinction of a species?
    a. Hunting
    b. Habitat destruction or fragmentation
    c. Being hit by a car
    d. Competition of a non-native species

13. Why are there usually fewer than five levels in an energy pyramid?
    a. Almost 90% of the energy in the first level is transferred to primary consumers
    b. Six levels would be too many
    c. Energy is lost as it is transferred to each trophic level, making less energy available at each higher trophic level
    d. There are too many top level predators

14. Suppose muskrats living in a marsh are overharvested. How would the flow of energy be altered? Choose the best answer.
    a. Less dominant wetland plants would not survive.
    b. The marsh would have greater diversity of herbivores.
    c. Cattails would dominate the marsh.
    d. Both a and c

For questions 15-18, match the description with the appropriate abiotic cycle. Answers may be used once, more than once, or not at all.

a. Water Cycle
b. Nitrogen Cycle
c. Carbon Cycle
d. Phosphorus Cycle

15. Needed for plants to make amino acids and DNA.

16. Transpiration is a process in plants that is part of this cycle.

17. Precipitation → Runoff → Percolation are all processes in this cycle.

18. A large amount of this element is stored as fossil fuels.

19. Which community is more stable?
    a. One with a large biodiversity
    b. One with a small biodiversity
    c. One with a large variety of plant species
    d. One with a mall

20. A tornado cuts a path through the Mark Twain National Forest. The trees in the forest were leveled, creating large swaths of open areas. Which answer best describes the succession stages that would follow this occurrence?
    a. Small trees followed by perennial plants and woody vegetation, followed by larger trees followed by a forest
    b. Annual plants followed by perennial plants and woody vegetation, followed by small trees, followed by forest
    c. Small trees followed by larger trees, followed by a forest
    d. People move in and subdivide the area into housing tracts

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   Answer: e

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    Answer: d

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    Answer: b